

OLIVER. (C.A.)

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A NEW SERIES OF BERLIN WOOLS FOR THE SCIENTIFIC DETECTION OF SUB- NORMAL COLOR-PERCEPTION (COLOR-BLINDNESS.)

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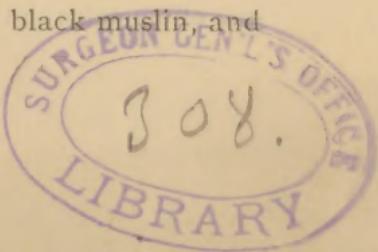
BELIEVING that Holmgren's method for the detection of color-blindness is the best, I have devised a new series of loose wools in an endeavor to place his plan upon a more substantial basis. In this set there are three series of colors:

1. Five principal test-skeins. These are pure colors. Latin names are employed to represent them. They are made of equal intensities, and are not designated except by being made of large size.

2. A series of twenty small pure match skeins. Each skein is either a pure tint or a pure shade of one of the large skeins, and has a black bangle containing lettering fastened to it; the inscription indicating that the skein is either a certain tint or shade.

3. A series of seventy-two small confusion match skeins. Each skein contains a mixture of certain percentages of light and shade of two of the large skeins. Each has a bangle which shows that is of such a character.

The wools are to be wrapped in black muslin and



will be enclosed in a black box, which will also contain an explanatory sheet with the colors arranged in their proper order, together with a book of instructions and a spectacle frame with a movable stop.

In addition to the good qualities possessed by the Holmgren wools, the following special advantages can be claimed for the new system:

1. *Five principal tests.* Pure blue and pure yellow have been added.¹ This has been done because both of these pigments serve as useful tests in the detection of the barely perceptible changes in color-sense which occur in the incipient stages of optic nerve disease.

2. *The wools are loose and separate.* By this the candidate has the entire mass of color from which to select, and there is nothing by which judgment as to plan can be brought into play.

3. *The colors are all of equal relative intensity.* This makes the selection a question of color choice alone; any interference to accuracy being avoided by keeping free from the power of skilful shading possessed by the "color-blind."

4. *Each skein has its value expressed.* Every skein becomes a unit of worth, and is related to every other skein. This has been done by the selection of colors of relative intensities, and by the use of a system of bangles which is incomprehensible to all but the initiated.

5. *It can be employed by any educated layman.* By means of the bangles the registry of the choice is easy for anyone who has been made acquainted with the method. A report of the selection can be copied upon a printed form, which can be sent to any authoritative

¹ The rose (purple) test of this series has more red in it than is found in this sample among Holmgren's wools. This has been done so as to get all of the principal test-skeins of the same degree of saturation and intensity.

person by whom it can be studied, and the color-sense of the examinee properly and fully determined.

6. *Accurate notings of passing color-changes can be preserved for future comparison.* This is of importance in furnishing means by which more accurate study of disease can be made, better notions of prognosis given, and more useful plans of therapeutics applied.

7. *Written and verbal expression of the character and amount of subnormal color-perception can be given.* This will afford the reader of any article or hearer of any paper upon this subject, more exact data in reference to the nature and degree of the color-changes noted. The vague terms now employed can be discontinued, and expressions like those used for the acuity of vision, etc., substituted.

8. *All the wools are of the same grade of manufacture.* This destroys, in measure, any argument against the employment of this material in color-testing, because here the chances for selection, by the use of touch, are greatly lessened.

9. *All the colors are from vegetable dyes.¹* By this, any error that might arise from harshness of color-surface allowing detection by the sense of touch is avoided. Besides, such colors are more lasting to light exposure, and not so subject to the objection of possessing odor.

10. *The use of a black surface in testing.* Here there is nothing but a display of color. Contrast is avoided,

¹ Some of the dyes of the present invoice are not vegetable in character, although they have been employed because differentiation by the sense of touch is impossible upon account of the equal intensities. In order to avoid any error whatever, attention will be paid to this question in all future selections.

I shall be pleased to assist anyone in obtaining the proper selection of wools, and to give all necessary information in reference to their manufacture.

and any chance for the formation of subjective after-colors lessened.

11. *Any order of testing may be pursued.* This is done by naming the tests, so that any color may be taken first.

12. *Quantitative determination as well as qualitative determination obtained at one sitting.* This has not been accomplished by any other method.

This series of wools was exhibited at the late meeting of the American Ophthalmological Society. James W. Queen & Co., of Philadelphia, have gone to considerable expense and difficulty in having all of the wools imported from a large European house. Sets will be ready in a short time.

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